

# Characterization of the commercialization establishments of Açaí (*Euterpe Oleracea Mart.*) at the Neighborhood Fair do 40 Horas, municipality of Ananindeua, Pará, Brazil

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**Abstract**— The objective of this work was to verify the sanitary hygienic conditions of açaí beaters in the neighborhood of 40 Hours, municipality of Ananindeua, Pará, Brazil. Study descriptive, exploratory of probability for convenience, like case studies, performed in April 2017, at the fair, in the neighborhood of 40 hours, municipality of Ananindeua-PA. The data were collected at four points of acai berry referred to point A, B, C and D. of the four visited 50% points were with licensing that allows the sale of the product; 75% was with INMETRO seal on Acai Scout machine; 50% owned exclusive freezer for storage and no handlers made use of 100% of the personal protective Equipment required. The main failure verified was in solid waste disposal. The study showed inadequate conditions of packaging, preparation and final destination of the product leading to the finding of a serious public health problem.

**Keywords**— Acai; Chagas disease; Environmental health.

## I. INTRODUCTION

The *Euterpe oleracea Mart.* Known as açaí, is a fruit produced in a palm tree popularly called Açaizeiro found in the state of Pará, in the Amazon region, is part of the vegetation of Terra firme forests, Várzea and Igapó (BRAZIL, 2017).

Pará is the largest national producer of açaí, according to data from the Brazilian Institute of Geography and Statistics (IBGE, 2016). The Secretary of State for Agriculture (SAGRI) says that in Belém there are about 2,700 açaí beaters registered in the association of the artisan sellers of Açaí of Belém; And of these, less than 10% are able to sell the product within the hygiene standards established by the State sanitary legislation. According to SEFA's tax control data in 2014, only in the

municipality of Ananindeua, the production of pulp and mix of açaí reached 5,562,848 kilos (TAVARES, 2015).

Being so popular, there is a concern about the handling of the fruit until reaching the final consumer in order to avoid food poisoning and contamination by parasites, which ends up being crushed along with the purplish fruit or the sweet buds, Especially in places without proper hygiene.

In 2010, the relationship between the consumption of açaí and the incidence of Chagas disease was confirmed, after 430 cases of the disease were registered in the state of Pará, in 2006. Chagas disease is caused by a protozoan, *Trypanosoma Cruzi*, able to survive in the pulp of the fruit both at room temperature, as at 4 ° C, average temperature of a refrigerator, and up to -20°C, in frozen açaí, being

transmitted by the ingestion of feces of Triatomine insects, popularly known in Brazil as "Barber". Tests performed showed that the protozoan causing Chagas ' disease is (BRAZIL 2010; DOCTORS WITHOUT BORDERS, 2018).

Thus, this work aimed to verify the hygiene conditions of the physical space; Hygiene conditions and the proper use of personal protective equipment (PPE) by the handlers and disposal of the waste generated, from the stores of commercialization of açaí in the neighborhood of 40 Horas, municipality of Ananindeua, Pará.

## II. METHODOLOGY

Descriptive study, exploratory probability of convenience, of the type of experience report. It was held in April 2017, in the morning, at the fair of the neighborhood of 40 hours, municipality of Ananindeua, Pará, Brazil.

The local owners and merchants who were present at the time of data collection were included in the study and agreed to participate in the research. Initially, the objective and meaning of the research was explained to traders and subsequently their authorization, the survey was initiated.

The data were collected through an elaborate check-list, based on Ordinance No. 368, of September 04, 1997, technical regulation on hygienic-sanitary conditions and good manufacturing practices for elaborating establishments/ Food industrializers; ANVISA resolution N ° RDC 216/2004-provides technical regulation of good practices for food services; Federal Ordinance N ° 2914/2011-provides on the control and monitoring procedures for the quality of water for human consumption and its potability pattern. Data from the scientific literature on the processing of açaí were also used.

The survey was carried out in four points of açaí, called Point A, B, C and D. The check-list guided the items:

- physical space and hygiene conditions;
- Hygiene conditions and proper use of personal protective equipment (PPE) by the handlers;
- Disposal conditions of the waste generated.

The people responsible for the research were adequately equipped according to the biosafety standards, without risks to those involved in the work. Participants were informed that at any time they could abandon the study, because their participation was voluntary.

## III. RESULTS AND DISCUSSIONS

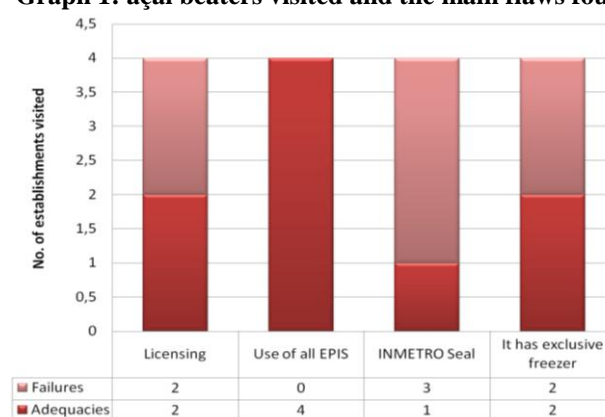
The Acai berry is the daily food for many people of the northern population and, at the affordable price and high nutritional value, often the only meal of the day. In this region the marketing and consumption are carried out

immediately after their processing, without any Heat Treatment (FERREIRA, 2014).

We visited 4 points (A, B, C and D) at the fair in the neighborhood of 40 hours, municipality of Ananindeua, Pará, in the morning, because it is the time of greatest movement of local workers, the points were all located close to one another.

Of the four points visited, 50% (2/4) were licensed to allow the legal sale of the product; None of the handlers made use of all mandatory Ppe according to biosafety; 75% (3/4) had INMETRO seal on the machine used to beat the Acai berry, among these, only 50% (2/4) had a freezer exclusively for the storage of the fruit, as illustrated in graph 1.

**Graph 1: açaí beaters visited and the main flaws found**



Source: Evaluation form, 2017.

After investigating the beaters points it was evidenced that point A was deactivated, the trader resated the Acai berry, that is, it was not it that produced the juice. We found some flaws such as: dirty environment, with presence of vectors, freezer was in degradation state with rust and oxidation at the edges, used to store other foods besides Acai, in the sink there were unnecessary objects like a tub of Child, as illustrated in Figure 1.

It is observed that there is a danger of contamination related to the lack of hygiene in the places visited, mainly in the sinks and balconies, as evidenced in the study of Lima., 2014 conducted in the neighborhood in the crowned in Manaus, state of Amazonas, which demonstrated that the Hose used to supply the storage tank is in an inadequate place and totally out of the proper hygiene standards.

Point B in turn was more organized and functioning with the licensing that allows the sale of the product, the manipulator was using some of the mandatory Ppe (except the CAP), it was observed that it performed the processing technique correctly. The establishment was glazed and with adequate lighting, free of vectors, the equipment and crockery were sanitized and in the Machine Scout there was seal of Inmetro, the freezer is well maintained and

hooded, was used exclusively for the storage of Juice, the packages were well conserved and packaged, and the sink equipped with hygiene products, as shown in Figure 2.



*Fig.1: Hygienic Situation of Point A*

Source: Field Search, 2017.

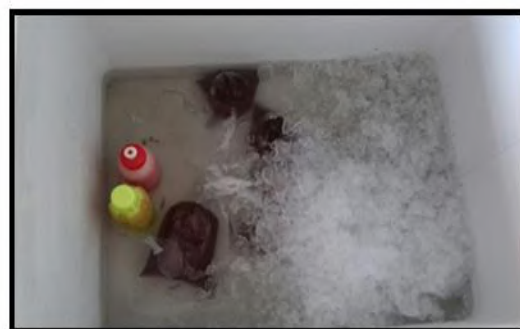


*Fig.2: Hygienic situation of Point B*

Source: Field Search, 2017.

In point C there were numerous errors, the site lacked licensing that allows the sale of the product, the equipment used to beat the fruit had the seal of INMETRO and was sanitized; The preservation of the juice was adequate, there was a freezer and good conservation state well-caught and clean, however, we identified other foods stored together

with the juice, the handlers wore only a cap, the sink next to it was in a precarious state, with A lot of dirty dishes, plastic bottle, along with detergent and solid waste, the acai seed bags were stacked on the trade floor near the sink and trash, without any hygienic storage, as shown in Figure 3.



*Fig.3: Hygienic situation of Point C Source: Field Search, 2017*

Source: Field Search, 2017.

The Municipal Health Secretariat (SESMA) and the Department of Sanitary Vigilance (DEVISA) have interdicted an establishment in the Cremação neighborhood of Belém. In the space was found remnants of cassava flour in the despolpar machine, showing that there is mixture in the manipulation of the fruit, and disfulfilled the hygiene standards. In addition, it identified a counterfeit seal (GLOBO, 2016).

Upon arriving at Point D, the handlers had already finished handling the Acai berry, the employees were cleaning the environment and washing the equipment materials that were used. The license for the sale of the juice was identified, the employees stated that they do the bleaching technique correctly, according to the step-by-step illustrated on the wall of the site. It can be verified that the machine had INMETRO seal, the freezer was relatively well preserved and stored only the juice, the lighting was adequate, but the employees did not use EPIs for cleaning, as illustrated in Figure 4.





*Fig.4: Hygienic Situation of Point D*

Source: Field Search, 2017.

In addition to the danger in the consumption of juice, there is a serious public health problem with regard to environmental health with the irregular disposal of solid residues of the fruit, as identified in the study by Menezes.,2018 that identified the irregular disposal of residues in the Public areas of the cities, as is the case in the municipality of Ananindeua belonging to the metropolitan region of Belém.

The disposal of garbage and rubble in public and canals is an environmental offense and provides imprisonment without bail, based on article 54 of law 9,605, which defines a penalty of imprisonment of up to five years to those responsible for illegal practice (Brazil, 1998). The Municipal plan for integrated solid Waste Management (PMGIRS) was elaborated in 2015, however still is pending approval and sanction (MENEZES, 2018).

The main flaw was in the disposal of solid wastes. Traders of all points stated that the surplus seeds of the juice production were placed in bags known popularly of straw and dumped in front of their points, where the presence of vectors is emphasized (Figure 5). According to information collected, this material would be collected by local Carters and dumped in open-pit dumps or nearby streams.



*Fig.5: Situation of solid waste dumped in front of the points visited.*

Source: Field Search, 2017.

For the waste generator the penalty is provided in law 12,305, which deals with the national solid waste policy and determines that the appropriate disposal for rubble and construction remains is the responsibility of those who produce this type of material (BRAZIL, 2010). The public power has been establishing partnerships in the implementation of the 476 governance system for shared management of the collection and appropriate disposal of açai pits in the municipality of Ananindeua (MENEZES, 2018).

It was not possible to visit other points, because there was resistance on the part of traders, which attributed the lack of knowledge about the importance of the survey and the mistrust of possible denunciations.

#### IV. CONCLUSION

The charge of the public power to make the correct disposal of the lumps constitutes an important indicator of local progression, for this is necessary to the approval of the Municipal plan for integrated solid Waste Management (PMGIRS) in the municipality of Ananindeua, which is a tool that regulates the proper management of urban solid waste.

It is also possible to affirm that, from this study, new researches related to the thematic axis can be carried out, in order to broaden not only the evaluation for other points

of beaters, but also its dissemination in the scientific area and in order to alert the Society On the dangers of consuming an acai berry produced in inadequate conditions, especially in the municipality where the work was done.

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